
# Beyond Beans: examining the effects of COVID 19 on other food value chains in Sub-Saharan Africa

## Data Brief

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## Key Findings

- The pandemic has disrupted input supply systems in almost all countries studied, causing low use of yield enhancing techologies such as improved seed and inorganic fertilizer.
- Measures put in place to curb transmission of the deadly virus have created labour shortages of workers at farm level and business level leading to higher labour prices.
- The functioning of the food supply chains have been disrupted by COVID-19 containment measures causing low prices in production hubs and high food prices in urban and peri-urban areas.
- The pandemic threatens the already dire food security situation in Eastern and Southern Africa.

## Introduction

The global spread of coronavirus presents major challenges to the agricultural sector in Sub-Saharan Africa. The impacts of coronavirus and measures to curb further spread directly and indirectly affect production, distribution, and consumption of bean, bean-based products and other crops. Given the already weak agricultural sector and other pre-existing climatic and non-climatic constraints, the pandemic was predicted to worsen the already dire food security situations in the regions, as well as undermine performance of informal small and medium scale businesses across value chains. This brief provides a summary of the immediate impacts of the pandemic at farm level production, business level, and consumption patterns in Eastern, Central and Southern African countries. Understanding the immediate impacts of the pandemic is crucial to finding short-term and mid-term interventions for transforming the bean value chain and guiding long-term policies for building the resilience of Africa's agricultural sector in future crises.

## Methodology

Data were collected from ten countries in Eastern, Central and Southern Africa between May and June 2001. We targeted bean farmers, coordinators of bean research programs, urban and peri-urban consumers, aggregators, and processors. We developed the questions using survey Gizmo,  and the links were sent through WhatsApp to participants. Those who did not have Whatsapp were interviewed through the phone or face to face in strict adherence to the COVID-19 safety measures and guidelines.

Data were collected from a total of 494 bean farmers, 6 coordinators, 4 bean processors, 500 urban and peri-urban consumers and 11 bean grain aggregators in Eastern, Southern and Central Africa.

# Farm level Impacts of COVID-19

The COVID 19 pandemic has impacted bean production, as shown in Table 1. Seed unavailability is more pronounced in DRC and Zimbabwe, possibly due to logistic problems resulting from lockdowns, border closures, and restricted transportation. Higher prices for labor challenges were reported by most farmers in Kenya and Zimbabwe, which could be linked to labor shortages directly occasioned by fear of contracting the virus or indirectly due to social distancing, stay-at-home orders, and restricted movements.

Besides, higher prices for inputs was another challenge in Kenya due to unavailability/reduced access caused by transport restriction or business closure. Whereas farmers in Ethiopia identified reduced access to agronomic and extension information, those in Zambia faced difficulties transporting produce to the market and collection centers. Low produce prices were a major problem in Uganda and Malawi, possibly due to a glut in production resulting from market closure, transport restrictions, or reduced business hours in the consumption hub.

***Table 1:*** Percentage (%) of farmers' responses impacts of COVID-19 pandemic on bean production in Sub-Saharan Africa

| | DRC | Ethiopia | Kenya | Malawi | Tanzania | Uganda | Zambia | Zimbabwe |
|---|---|---|---|---|---|---|---|---|
| **Seed unavailability** | 46.51 | | | 3.70 | | 4.35 | 0.99 | 32.2 |
| **Higher prices for inputs** | 19.77 | | 22.22 | 9.26 | | 13.04 | 2.97 | 30.51 |
| **Delay in planting** | 15.12 | | | 5.56 | | | 1.98 | |
| **Delayed harvest** | 8.14 | | | | | 4.35 | 0.99 | |
| **Low price in the market** | 4.65 | | 11.11 | 44.44 | 9.09 | 21.74 | | 5.08 |
| **High prices for hired labor** | 1.16 | 6.25 | 22.22 | | | 8.7 | 0.99 | |
| **Fertilizer unavailability** | 1.16 | | 11.11 | 5.56 | 63.64 | 13.04 | 0.99 | |
| **Difficult to access credit facilities** | 1.16 | | | 3.7 | | 4.35 | 15.84 | 1.69 |
| **Lower demand in the market** | 1.16 | | 22.22 | 24.07 | 9.09 | 13.04 | 8.91 | |
| **Reduces access to agronomic/extension** | 1.16 | 93.75 | | 1.85 | 9.09 | 8.7 | 28.71 | 11.86 |
| **Difficulty in transportation** | | | 11.11 | 1.85 | 9.09 | 8.7 | 37.62 | 18.64 |

# Food Types/Categories Consumed Before and During COVID-19

The consumption of all food categories dropped across the region during the pandemic, except cereal consumption that increased by nearly 6 percent, as shown in Figure 1. Most cereals are food staples in the region, and farmers who stocked to sell later for higher prices had to consume them during the pandemic.

There was a 31 percent drop in meat consumption, making it the most least consumed food type during the pandemic. The consumption of other legumes compared to beans reduced by a large margin (21 percent). Roots and tubers, fish, and fruits consumption reduced by nearly 21 percent, 20 percent, and 12 percent, respectively. The differences between food consumption before and during the first two months of the pandemic were highly statistically different.

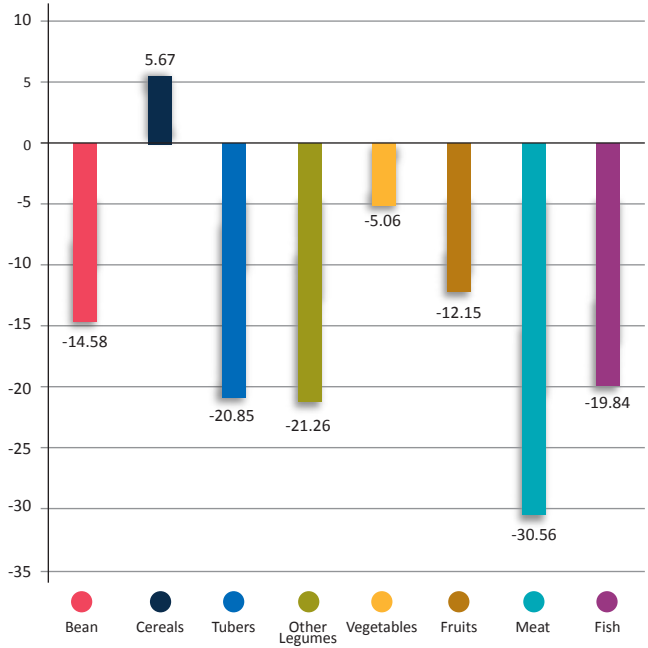


*Figure 1*: Relative changes in percentages of farmers that consumed different types of food during the pandemic

# Changes in Bean Consumption Patterns During the Pandemic in Rural Areas

Results in Table 2 show that bean consumption for households in Burundi and Mozambique remained largely unchanged during the pandemic, because beans has already been harvested, possible reason for no change in food consumption. All households in Cameroon ate more beans during the pandemic, possibly for the same reason as those in Burundi and Mozambique.

Over sixty percent of rural households in Kenya and Uganda ate more beans during the pandemic even though they had planted or where about to plant respectively. This was because most of the beans they had was being planted. A majority of households in DRC and Malawi ate less beans during the pandemic.

On the other hand, whereas forty percent of households ate less beans in Zambia, about 38 percent consumed more beans during the pandemic. Those in Zimbabwe reduced eating beans (38 percent), while one-third did not change their bean consumption. For households in Ethiopia, 38 percent and 43 percent ate less beans and did not change bean consumption. In Tanzania, most households did not change bean consumption (65 percent), with 30 percent eating more beans. These results reveal that the impact of the pandemic on bean production varied by country.

***Table 2:*** Has the bean consumption pattern in your households changed?

| | Ate less | No change | Ate more |
|---|---|---|---|
| Burundi | 7.32 | 90.24 | 2.44 |
| Cameroon | | | 100.00 |
| DRC | 88.10 | 4.76 | 7.14 |
| Ethiopia | 37.84 | 43.24 | 18.92 |
| Kenya | 2.44 | 29.27 | 68.29 |
| Malawi | 78.38 | 16.22 | 5.41 |
| Mozambique | | 97.22 | 2.78 |
| Tanzania | 4.55 | 65.45 | 30.00 |
| Uganda | 17.07 | 21.95 | 60.98 |
| Zambia | 40.00 | 22.50 | 37.50 |
| Zimbabwe | 58.33 | 33.33 | 8.33 |

# Changes in Frequency of Bean Consumption During the Pandemic in Urban and Peri-urban Areas

The proportions of urban and peri-urban households that consumed beans twice per week and more than three times a week increased by 0.4 percent and 2 percent, respectively (Figure 2). In contrast, households that consumed beans every day, once, and thrice reduced by 0.6 percent, 1.6 percent, and 0.2 percent, respectively. These results that COVID-19 has mixed effects on the frequency of bean consumption in the region.

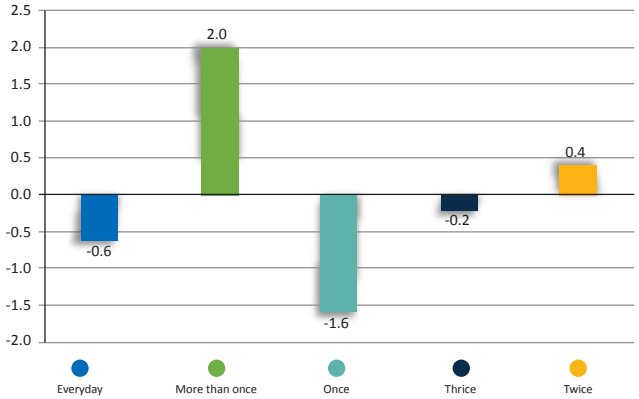


*Figure 2:* Relative proportional changes in the frequency of bean consumption by urban and peri-urban consumers during the pandemic

In Table 3, 64 percent and more than half (51 percent) of urban and peri-urban consumers in Malawi and DRC ate less beans during the pandemic. Most households in Burundi, Cameroon, Ethiopia, Kenya, Mozambique, and Tanzania pre-COVID-19 quantities of beans they consumed did not change. However, the proportions of urban and peri-urban households in Uganda and Zambia consumed more beans during the pandemic.

*Table 3:* Has the bean consumption pattern in your households changed?

| | Ate less | No change | Ate more |
|---|---|---|---|
| Burundi | 48.65 | 51.35 | |
| Cameroon | 17.14 | 54.29 | 28.57 |
| DRC | 51.11 | 46.67 | 2.22 |
| Ethiopia | 11.43 | 65.71 | 22.86 |
| Kenya | 31.43 | 60.00 | 8.57 |
| Malawi | 64.71 | 20.59 | 14.71 |
| Mozambique | 30.56 | 47.22 | 22.22 |
| Tanzania | 6.25 | 72.32 | 21.43 |
| Uganda | 9.30 | 23.26 | 67.44 |
| Zambia | 25.00 | 22.92 | 52.08 |
| Zimbabwe | 35.00 | 45.00 | 20.00 |

## Changes in proportions of consumption of food during the pandemic in urban and peri-urban Areas

There were significant declines in proportions of households that consumed all food categories across the region. The decline was higher for meat, fish, other legumes, and fruits. Fruits, fish, and meat are perishable food products, and, therefore, distribution to urban areas was impacted by transport restrictions. Most businesses that sell fish and meat lacked the capacity to acquire preservation equipment to reduce losses. In contrast, the decline was relatively low for cereals and vegetables. Cereals tend to have a stable supply because of their storability compared to other food types.

Additionally, cereals such as maize, rice, and sorghum are food staples in the region, thus other food types. Therefore, amid the pandemic's uncertainty, most consumers may have purchased more cereals to off-set possible shortfall in supply and consumption. On the other hand, vegetables are among the most grown crops in urban and peri-urban areas in sub-Saharan Africa (Amao, 2020; Davies et al., 2020), meaning that the pandemic may not have significantly impacted household access to vegetables relative to other perishable products.

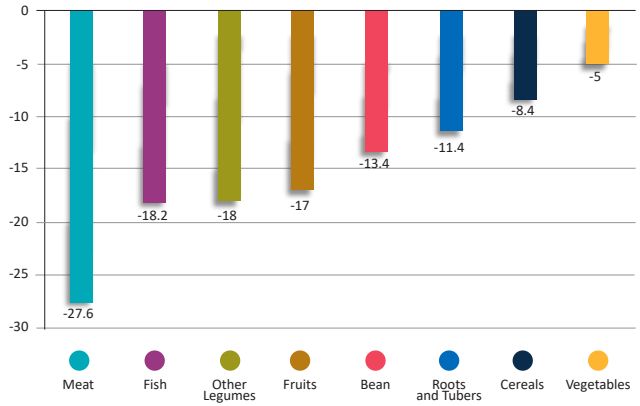


***Figure 3:*** Relative changes in proportions of consumption of food during the pandemic in urban and peri-urban consumers in Sub-Saharan Africa

# Impacts of COVID-19 on Bean Aggregators

Aggregators in all the countries except in Kenya and Burundi practiced contract farming (Figure 4). While aggregators in Tanzania (1) and Zambia (2) reported that seed distribution was not affected by the pandemic, while those in Uganda (2) and Zimbabwe (4) experienced challenges distributing seed to contracted farmers (Figure 5). In Eastern Africa, aggregator in Kenya and Burundi indicated that while the pandemic affected business logistic, the spread of the virus and government containment measure did not change distances covered to access bean grain (Table 4).

In contrast, Tanzanian aggregator did not experience logistic challenges or changes in distances to bean production hubs as a result of the pandemic. In contrast, aggregators in Uganda reported changes in distances and logistic challenges caused by coronavirus. In Southern Africa, while all aggregators in Zambia reported that businesses were logistically affected, only one aggregator in Zambia confirmed being affected (Table 4). Half of the Zimbabwean aggregator and their counterparts in Zambia reported no changes in distances they covered to access grain.

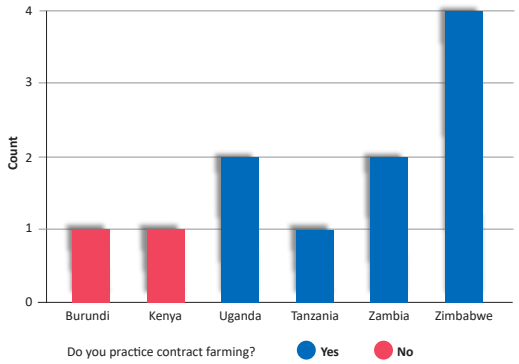


*Figure 4:* Proportions of aggregators practicing contract farming

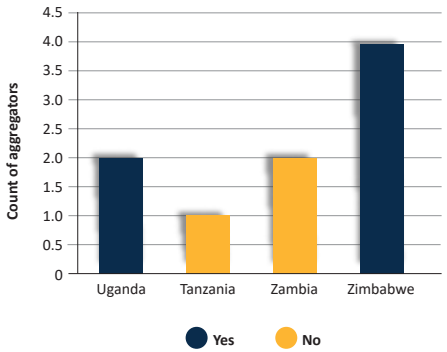


*Figure 5:* Number of aggregators reporting that seed distribution was affected by COVID-19

*Table 4:* Number of aggregators reporting that logistic and distances were affected by coronavirus

| | Logistics | | Distance | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| Burundi | 1 | | | 1 |
| Kenya | 1 | | | 1 |
| Uganda | 2 | | 2 | |
| Tanzania | | 1 | | 1 |
| Zambia | 1 | 1 | | 2 |
| Zimbabwe | 4 | | 2 | 2 |

The pandemic caused high logistic costs for both internal and cross border trade of beans. Another important cross-border effect of coronavirus according to aggregators was increase in storage costs. Other internal consequences for aggregators were high transport costs, reduced sales, and low grain prices (Figure 6).

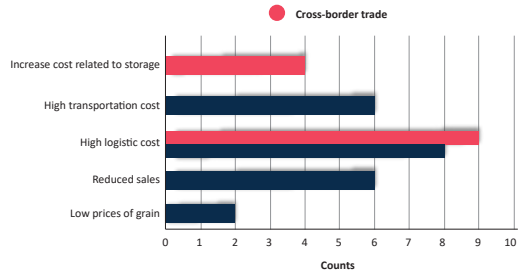


*Figure 6:* Coronavirus related effects on internal grain markets and cross-border trade identified by aggregators

*Table 5*: Business operation capacity of aggregators during the pandemic

| | 100% | 75% | 50% | 25% |
|---|---|---|---|---|
| Burundi | | | | 1 |
| Kenya | | | | 1 |
| Uganda | | 1 | | 1 |
| Tanzania | | 1 | | |
| Zambia | 1 | 1 | | |
| Zimbabwe | | 3 | 1 | |

Aggregators in Kenya and Burundi, and one in Uganda operated at one-quarter of the usual capacity during the pandemic. Another aggregator in Uganda, three in Zimbabwe and, one in Zambia and Tanzania operated at 75% of their usual capacity. One aggregator in Zambia operated 100% of the usually capacity (Table 5). Businesses that innovated adopted digital, mechanical, and technical responses to address the effects of the virus on their business (Table 6).

*Table 6*: Number of aggregation business that developed innovations in response to effects of the pandemic

| | Yes | No | Innovation |
|---|---|---|---|
| Burundi | 1 | | |
| Kenya | 1 | | Digital |
| Uganda | 2 | | Digital, mechanical |
| Tanzania | 1 | | Technical, mechanical |
| Zambia | 1 | 1 | Digital |
| Zimbabwe | 3 | 2 | Digital |

# Impact of COVID 19 on Grain Processors

Table 7 shows the status of bean processing business before and during COVID-19 in terms of traded volumes and sales. Grain processors in Zimbabwe, Uganda, and Burundi projected that traded volumes of bean products would increase during the pandemic from their previous levels. They based their projections on the presumption that bean grain and other bean products will be part of food relief/aid packages advanced by governments and humanitarian organizations to poor and vulnerable individuals and groups, especially women and children disproportionately affected by the pandemic.

However, processors in Zimbabwe and Uganda anticipated poor sales over the course of the pandemic attributed to lower individual and household purchasing power resulting from job and income losses, as well as logistic challenges they were likely to face distributing the bean products to points of sale. In contrast, processors in Tanzania and Burundi expected sales to be good like pre-pandemic levels, respectively. Tanzania and Burundi had the least stringent COVID-19 response measures than Zimbabwe and Uganda, explaining why the sales were expected to be unaffected.

*Table 7*: Impacts of coronavirus on bean processors

| | Volumes trade | | Sales | |
|---|---|---|---|---|
| | 2019 | 2020 | Before | During |
| **Zimbabwe** | < 1 ton | 1 | Poor | Poor |
| **Uganda** | 5 | 7 | Average | Poor |
| **Burundi** | 10 | 20 | Good | Good |
| **Tanzania** | 0.4 | | Average | Average |

While processors in Zimbabwe and Uganda sold processed products to supermarket and directly to consumers, those in Burundi sold to local markets and supermarket. Processors in Zimbabwe, Uganda, and Burundi reported that consumption of any of their beans products (flour, snacks, grain, etc) had decreased during the pandemic. Processors in Uganda, Burundi and Zimbabwe sold to supermarkets where prices were possibly unaffordable to poor men and women consumers in urban areas. Secondly, low consumer purchasing power during the COVID-19 reduced demand for bean products.

Closure of informal markets which the rural and urban poor depend on in accessing bean products could also have contributed to decrease in consumption of bean products. Processors in Tanzania and Uganda operated at half of their usual capacity while Zimbabwean and Burundian processors operated at 25% and 75% of their pre-COVID-19 capacities.

*Table 7:* Continuation

| | Buyers | Consumption | Op. capacity |
|---|---|---|---|
| **Zimbabwe** | Supermarkets, consumers | Decreased | 25% |
| **Uganda** | Supermarkets, consumers | Decreased | 50% |
| **Burundi** | Local markets, supermarket | Decreased | 75% |
| **Tanzania** | Local markets, supermarket | Increased | 50% |

## Bean Value Chain Coordinators

The main challenges of coronavirus to grain production, according to bean coordinators in Tanzania, Burundi, Mozambique, Zimbabwe, and Rwanda were increased digital costs and high prices of hiring farm workers (Figure 7). Other effects of coronavirus as reported by bean value chain coordinators were transportation challenges, limited availability of labour, and high input prices. The coordinators also mentioned that increase in input and labour prices as important constraints to seed production during the pandemic (Figure 8).

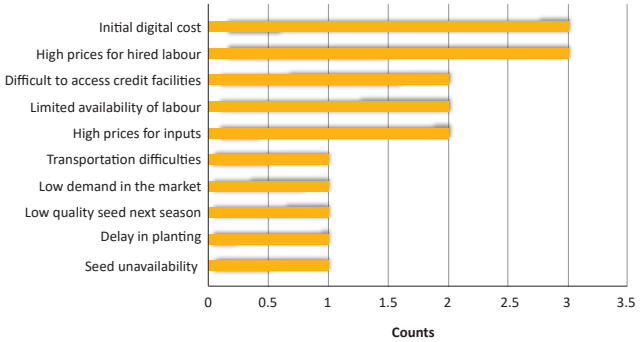


*Figure 7:* Coronavirus related effects bean grain production as identified by coordinators

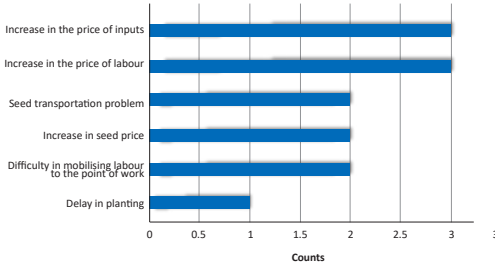


*Figure 8:* Coronavirus related measures affect seed production as identified by coordinators

However, in Figure 9, coordinators in Tanzania, Burundi, and Zimbabwe identified new market opportunities and increased demand for certified seed as positive impacts of coronavirus on seed production.

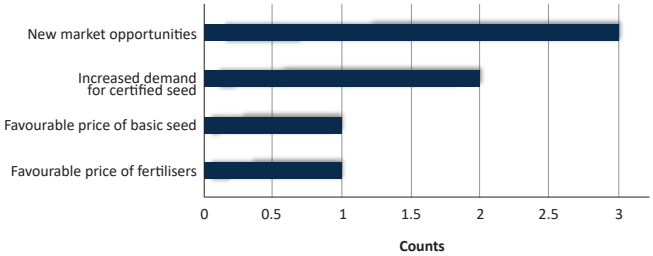


*Figure 9:* Positive effects of coronavirus on seed production as identified by coordinators

## Conclusion

The data show that coronavirus has had unprecedent impacts across the bean value chain. Farm level impacts are transmitted along the value chain to consumption. The major farm level effects of the pandemic were seed and fertilizer unavailability, higher input prices, and transpotation challenges. Most businesses reduced their operational capacities and experienced logistic challenges. These impacts were felt at household consumption levels, with significant decline in food consumption.

It is recommended that governments shoulds keep the bean value chain functioning amid the pandemic and in the future by i) shortening input and food supply chains, ii) keeping borders open to encourage safe trade of grains, iii) keeping food markets open by supporting business to curb coronavirus transmission, and iv) public-private partnerships to strengthen production and business capacities of farmers and businesspeople.

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